ForesTalk

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Garth Coward
Executive Editor
Cameron Young
Editor
Ken Seabrook
Art Director

T.M. Apsey
Deputy Minister of Forests
J.R. Cox
Director, Information Services Branch

Cover: It's spring again; the forest awakens. The buds on every tree and plant burst into full flower under the warming sun. The western wood lilies featured on this issue's cover were photographed by Nelson freelance writer and photographer Doug Leighton.

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The Ministry of Forests' recently-announced timber apportionment plans for B.C.'s crown forests are the culmination of an extensive overhaul of the forest tenure system in B.C. that began with the 1978 forestry legislation. These new apportionment plans — the issuing of revised timber cutting rights to the forest industry — will provide both long-term stability for industry and flexibility for government. Notably, the ministry is setting aside significant amounts of timber for the small business enterprise program, and additional timber will be kept in Forest Service Reserve to meet special requirements.

Tom Waterland

Hon. Tom Waterland, *Minister of Forests*

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ESTUARY LOGJAM

by **Peter Grant**

Whether the Fraser or the Cowichan, the Nanaimo or the Skeena, dozens of B.C. rivers make their way to the ocean through flat, fanning lowlands of rich soil washed by saltwater tides. With their complex food chains nourishing hundreds of wildlife and fish species, estuaries like these are among the world's most productive ecological zones.

But estuaries have another premium value: they have long served as key points in human trade and commerce. Half the world's great cities are situated at rivermouths, and in the hundred-year growth of B.C.'s coastal forest industry, rivermouths have been the favoured site for mills. Today 80 percent of the 31 million cubic metres of wood harvested annually along the coast travels by water to tidewater mills on the south coast. The manufactured lumber, pulp and paper is then shipped from railheads and freighter berths handy to the rivermouth sites.

The act of storing logs in an estuary, however, can harm much of the estuary's animal and vegetative life. Added to that are the effects of dredging for ship channels and the ills of haphazardly-managed city and mill waste. Just how much human activity can any estuary stand before it loses its value as a natural habitat?

Conflict On The Cowichan

The scene is the intertidal shallows of Cowichan Bay near Duncan on Vancouver Island's protected east coast: from the end of Westcan Terminal's jetty thrusting into deeper water, the log booms aren't that noticeable, but they stretch halfway across the Cowichan estuary's two-kilometre width. The logs in some booms are bleached white by long exposure to the weather. At low tide they sit on mud crawling with life.

The tide is in, and men in dozer-boats are sorting logs into booms for towing across the Strait of Georgia to sawmills on the Fraser River. Beyond the boats a dozen gleaming white swans paddle peacefully about. In the distance, just back of the furthest reach of the tide, is a sawmill; its clatter and whine can be heard a mile away. Lumber from this and other sawmills is piled on the jetty, awaiting shipment overseas.

The sawmill belongs to Doman Industries, a Duncan-based company. Its Cowichan estuary sawmill is well-known for high speed and efficiency in milling small timber. Most of the logs Doman harvests or buys are sorted in the company's mill pond. Logs not selected for the sawmills are reboomed and stored in the estuary until a tow is accumulated. Some of these logs will be taken to Doman's Nanaimo sawmill; others will be sold on the open log market. In all, Doman uses about 60 of the 100 hectares of the estuary shoreline leased for log handling and storage, and over the past seven years this activity has been the subject of continuous study and controversy.

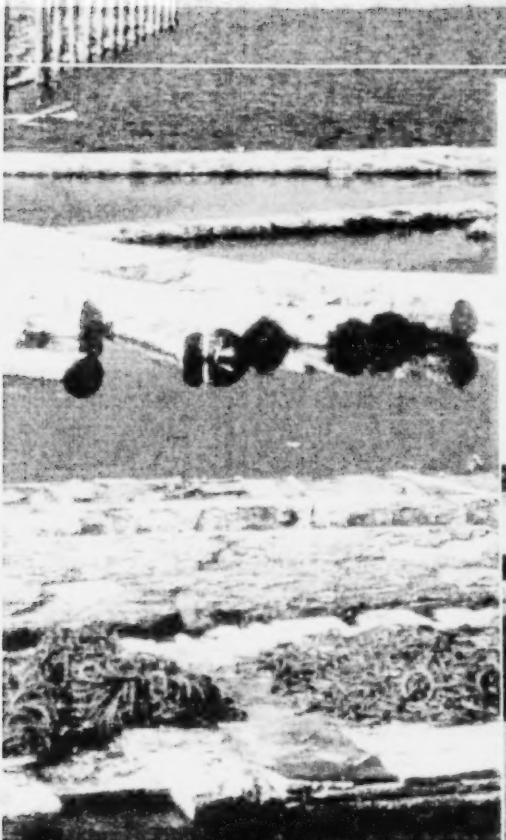
Cowichan Bay is world famous for its sport salmon fishing, and it supports a cluster of marinas and tourist facilities. The Cowichan produces more fish than any other estuary on Vancouver Island, and the Cowichan Indian band, along with the wider-ranging commercial fishing industry, depends on the chinook, coho and chum that run the bay and the river. But there is a general concern that the handling of logs in estuaries is detrimental to salmon runs in rivers like the Cowichan.

The Cowichan estuary is also a stopping place of international importance for waterfowl on the Pacific flyway; some 35 species of ducks, geese and other waterfowl, and over 200 species of songbirds, use the estuary at various times of the year. Their value may be less tangible than the salmon fishery's, but threats to the habitat of some species provoke a strong reaction from protection groups like the B.C. Wildlife Federation.

Two task forces have studied the conflicting claims for the Cowichan estuary, and log storage has emerged as the major problem because of its impact on the intertidal zones. The first task force, convened by the B.C. government in 1974, recommended no industrial expansion. Soon after this report, however, Doman Industries purchased and rebuilt the small sawmill already located there. Several subsequent industrial development proposals further challenged the no-development policy, and the government assembled a second task force. In its 1980 report, the task force recommended that the log flow pattern through the estuary be changed, reducing by 70 percent the area used for storing logs. The task force's aims are being pursued by negotiation between government agencies and industry users. Meanwhile the logs are in the estuary as before.

Doman Industries' vice-president Joe Frumento points out that any coastal mill needs rivermouth storage areas if it is to store logs in water: if logs are left for even just a few weeks

PHOTO: MICHAEL MCNALL



in undiluted salt water the wood can be attacked by the teredo, a marine animal that bores into the logs and ruins their value as lumber. But Frumento says the company has been looking for ways to reduce its log handling and storage space in the estuary. It is using booming grounds in Howe Sound, and a proposed dry-land storage yard next to the Cowichan estuary sawmill would eliminate some of the handling and storage in the water. If alternative storage can be found "within a mile or two," more logs can be removed from the estuary.

"The mill has to keep a month's log supply within a day-and-a-half's tow," Frumento says, stressing that there will always be fluctuations in the log flow through the estuary due to seasonal patterns of logging and towing. (The mill has to build up a handy inventory for the winter months when the remote logging camps feeding the mill are shut down.) As for the recommended 70 percent cutback in Doman's log storage area, Frumento says: "You can do anything you want if you have the money. The forest industry is looking at hard times. We have to keep our competitive edge in world markets."

...with all natural resources, there are limits to the uses B.C.'s estuaries can be put to, but defining those limits is an arduous process. Log handling and log storage in the Cowichan Bay estuary (double page) have been the subject of seven years of continuous study and controversy; it could take two more years to settle all the resource-use conflicts here. The fishing boats of Lulu Island at the mouth of the Fraser (above) are just one of over 150 Fraser River estuary users identified in a massive study aimed at regulating estuary activity on the Fraser.

Marine life and wildlife thrive in river estuaries, making full use of the sheltered waters and abundant food supplies. While a heron (above) is easy enough to spot enjoying a day's fishing at a river mouth, it takes a signpost (top) to let people know that estuaries can be valuable salmon habitat.

On the other side of the issue, a group of Duncan-area citizens known as the Cowichan Estuary Preservation Society has been a persistent critic of both industry and government. Brigitte Meagher, president of the society and a director of the B.C. Wildlife Federation, says: "The task force report identified log storage as the main problem in the estuary, but our governments have done nothing to implement the report. When pressure builds up from people like us, they go back and study the problem rather than do something. Why have a whole new study to come to the same conclusion as the one reached six years ago — that logs shouldn't be stored on the estuary?"

Meagher also points out that one of the conditions Doman was required to meet when it was granted permission to build its Cowichan mill was that it use no more than eight hectares of the estuary for temporary log storage.

Ann Holden, another preservation advocate, feels the federal fisheries department has been unwilling to take a firm stand on protecting the estuary's productive habitat.

Ken Lambertsen, a coordinator with the B.C. Ministry of Environment, is in charge of implementing the estuary task force findings. He sees the process of settling the Cowichan log flow problem as being part of a method for dealing with all estuary conflicts — a method that is still evolving. The Ministry of Environment has already developed some of the needed tools, but an important element is still missing: how to rank the importance of various estuary uses. Says Lambertsen: "It's difficult to put ecological values down on a balance sheet."

Lambertsen expects the competing claims for use of the Cowichan estuary will be settled by intelligent trade-offs, "with minimum loss of the estuary's productivity. We have to maintain a reasonable balance among legitimate interests, and manage the environment wisely." He says it could take two years to settle all the conflicts on the Cowichan.

Compromise On The Nanaimo

The search for a way out of B.C.'s estuary logjam has yielded one modest success story so far: a management plan for the Nanaimo River estuary. The Nanaimo estuary fish habitat and log handling task force, comprised of representatives from the forest industry, fishermen and various government agencies, was established in 1978 to look at the estuary-use conflicts surrounding the proposed Duke Point port and industrial park south of Nanaimo. The federal fisheries department, pointing to the powerful new Fisheries Act, insisted on protection of salmon habitat. The result? The estuary's most productive areas will be protected as fish habitat, while log booms are now confined to the less productive river channel.

The environment ministry's Ray Travers, a task force member, says the Nanaimo estuary study was a B.C. landmark: the first time a land-use conflict had been settled through a cost-benefit study. The study enabled the group to peg the estuary's value as a salmon habitat.

Research by John Sibert of the Pacific Biological Station in Nanaimo established that propeller wash and scouring by logs damaged the eel grass shallows where juvenile salmon feed, eliminating hosts of tiny nutritive organisms. "It wasn't previously recognized that juvenile salmon feed in estuaries," Sibert explains. The next step was to weigh the cost of this damage to fish populations against the extra cost of relocating the logs.

An Awesome Task

There are other signs of headway towards sound management of B.C.'s estuaries, but deciding estuary use by a process of negotiation is an awesome task. In cases like the Tsitika River estuary on Vancouver Island, where an unusual killer whale habitat was threatened by a proposed log handling facility, the solution was relatively simple — a ban on the handling of logs.

The Fraser River estuary study, on the other hand, is a massive enterprise aimed at regulating the needs of over 150 users of an estuary that supports a shipping industry employing 20,000 people; clusters of heavy and light manufacturing industries extend another 30 kilometres upstream. The Fraser has one of the world's largest salmon runs and is Canada's largest wintering area for waterfowl. Log handling on the Fraser's north arm is only one issue in the tangle facing the task force.

Among the points that have come out of estuary studies is the need for more fisheries research. Just how important are estuaries as feeding and

Log booms and log barges (below), together with dozer boats (left), are common sights along B.C.'s coastline. But while B.C.'s coastal forest industry is looking for new ways to store and handle its log harvest, river mouths and sheltered bays will continue to serve as major log handling centres.

The north arm of the Fraser (above) is a major log storage area, whereas the river itself supports one of the largest salmon runs in Canada. Considerable estuary research, like the work carried out by researchers from U.B.C.'s Westwater Research Centre (right), is still needed to determine how much industrial activity B.C.'s estuaries can tolerate before losing their value as habitat for both fish and wildlife.

nurturing grounds for salmon? Nobody knows for sure.

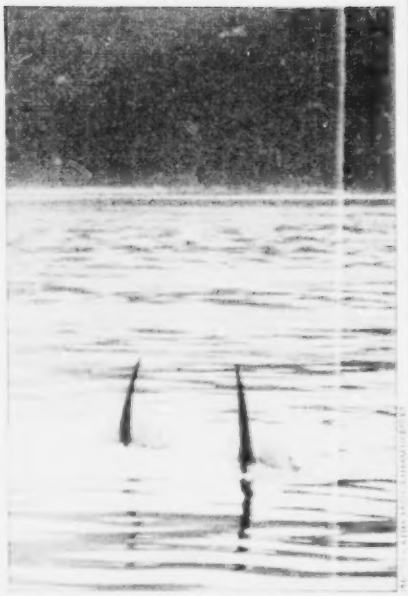
"The fisheries department has done insufficient research to indicate the priority estuaries have in their environmental concern about fish," says Doman Industries' Joe Frumento. Biological researchers, says one report to the Cowichan estuary task force, "have only begun to understand the inter-relationships involved in the food web of an estuary." Biologists have zeroed in on the intertidal zone as the crucial food-producing ecosystem, but the state of knowledge is such that no one can prove, for instance, that all log handling degrades the estuary habitat. In fact, a study of the Musqueam booming grounds on the Fraser estuary by U.B.C.'s Westwater Research Centre suggests that juvenile salmon may have a tolerance for log booms.

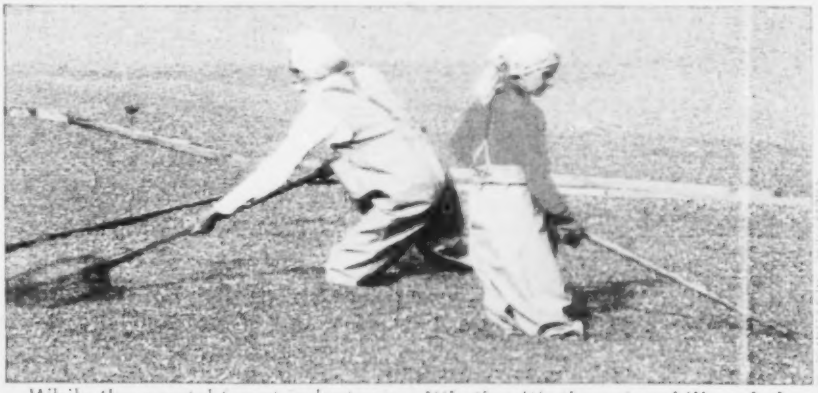
The federal fisheries department has another key role to play in the management of B.C.'s estuaries. It's one of the few agencies with the clout needed to enforce environmental standards. In a recent book, *Salmon Protection and the B.C. Coastal Forest Industry*, Westwater assistant director Anthony Dorcey writes: "The federal Fisheries Act has provided regulators with substantial power that helps them counterbalance the immense economic and political power of the forest industry."

Rod Bell-Irving of the federal Fisheries and Oceans' habitat management division admits that to date his agency has not assumed an active role in dealing with impacts on the salmon fishery. "We tend to be reactive, to fight fires," but, he says, "once you start sitting down with the forest industry and fully discuss each other's concerns, you can start finding solutions. The Nanaimo estuary study is a classic case of this."

Looking ahead, a recent government-industry study sees no decrease in coastal mills' total log requirements over the coming decades, and the study's steering committee sets out a series of recommendations covering long-range planning and comprehensive management of storing logs in water. While dryland sortyards are being built by some mills (when they can buy land at a reasonable cost), freshwater estuaries, which repel the destructive teredo and by their very nature provide logs with protection from wind and wave action, will continue to be the preferred place for storage of logs along the coast.

Choosing between one use and another in an estuary will be the result of a political assessment of the costs and benefits of the competing uses. An example of the stakes: there's a proposed expansion of the Squamish Terminals' pulp shipping facility in the Squamish estuary. If the expansion goes ahead it could damage the estuary's already declining value as a fish and wildlife habitat. If, on the other hand, the Squamish estuary study group turns down the proposal, plans for an industrial park based on ready access to deep-sea shipping will also fall through. So the study group is sponsoring a series of biological studies and cost-benefit analyses aimed at pinpointing the effects of building or not building the berths.





Whether it's the unique killer whale habitat** (top) **provided by the Tsitika estuary, or the low lying bog lands of the Fraser being used to harvest cranberries** (above), **B.C.'s estuaries serve a multitude of natural and industrial needs. Their value simply cannot be over-estimated.

While the coastal forest industry is reconsidering its methods of transporting and storing logs, and while the federal government, seeking ways to build up the Pacific fisheries' salmon stocks, is moving to halt the erosion of productive estuary habitat, informed observers wonder if enough is being done overall for B.C.'s estuaries.

Some people, like former B.C. Wildlife Federation executive director Bill Otway, are pessimistic. "Our estuaries are being two-bitted to death," Otway says.

Others, such as the members of the Fraser River estuary study steering committee, are optimistic: "There is still time to avoid irreparable degradation to the remaining natural ecosystem while continuing to provide for the needs of the region's port and commercial facilities," reads the committee's report, holding out hope that we may be on our way to reclaiming an undervalued heritage.

COLLECTIONS

Planting the Planet

B.C.'s treeplanting record sets the standard in Canada — almost 73 million seedlings planted in 1980-81 on 62,778 hectares of forestland. Ontario is second, with 30,830 hectares planted.) And once the Ministry of Forests and the forest industry jointly reach their 1984-85 goal of growing 150 million seedlings annually, B.C. will be well into the worldwide reforestation race.

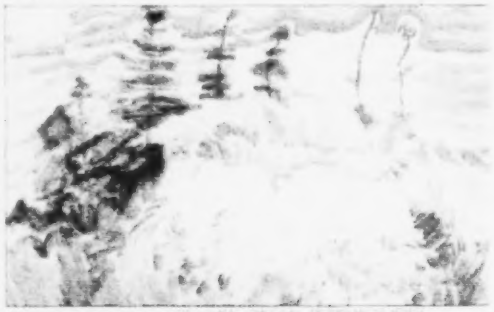
In 1978, the state of Washington planted about the same number of seedlings as did British Columbia. Oregon, only slightly larger than Washington, had over 100,000 hectares planted in 1978. Further afield, Finland has one of Europe's oldest forest industries and an even more impressive reforestation record — 120,000 hectares restocked in 1980, on a land base one-third the size of B.C. And Sweden, not half B.C.'s size, restocked 170,000 hectares of logged land in 1980.

Emily Carr

A small Victoria woman who referred to herself as "the little old lady on the edge of nowhere," Emily Carr painted the West Coast rain forest as no one else has ever done. Her work on the 1928 and '30s, which reveals her respect for Indian totem poles, old growth forests and, finally, of the open sky, is called "the finest expressionist Canadian painting." Her single most famous painting, "Forest, British Columbia" (1931), shows the stark side of the forest, while "Scorned as Timber, Beloved of the Sky" (1936) is almost all glowing skylight.

The Indians called her Klee Wyck, the laughing one, and Carr triumphed over loneliness, public indifference and ill health. Her sixth book, *Growing Pains*, written just before her death in 1945, carries this account of a late encounter with the forest forces: "With spring all about me I sat sketching in the clearing that was now given over to second growth — baby pines, spruce, hemlock, cedar and creeping vines, brewed, bracken. . . . Though everything was so still you were aware of the tremendous forces of growth pounding through the clearing, aware of sap gushing in every leaf, of push, push, push, the bursting of buds, the creeping of vines. . . .

As she began to move away from painting forested landscapes in favour of scenes of clear-cuts regenerating under open skies, Carr's art reflected the fate of B.C.'s coastal forestland.



SHEAR DEPENDABILITY

Next to treeplanting, the biggest area of silvicultural employment in B.C. is stand tending. Like carrots, trees often need to be thinned in order to grow vigorously.

Using lightweight, highpowered chainsaws, workers wade through the often jungle-like young stands, cutting out undesirable species and diseased trees. Working in constricted conditions the spacer has to be constantly on his guard. Saw teeth will sometimes catch and pull the saw operator forward onto the saw, or the saw might kick back into his face. The Workers' Compensation Board has placed stand tending in its highest risk category.

One attempt to avoid the injuries and breakdowns associated with chainsaw spacing is being tried in the Vanderhoof forest district. There, stands of lodgepole pine are thinned when they're still very young. This means the work can be done with hand tools called Italian shears, rather than with chainsaws.

Each year the Ministry hires a special shear-wielding spacing crew — made up entirely of local women. "We've found the women work as hard as men and are more dependable," says project supervisor Gary Radchenko. "Many of these women are back for their fourth year."

By Hook or by Crook

He was likely researching the origins of his name when *Lores Talk* reader Doug Forrester of West Vancouver uncovered a cache of information in the pages of Dorothy Hartley's *Lost Country Life*, a fascinating study of medieval England. "Country people were identified by their principal occupation," writes Mr. Forrester. Thus his own *forester* forbears in feudal times were part of the staff of every estate.

The forester's main job was to protect the estate's "vert and venison" (standing timber and wildlife). The dangers weren't pests or fire, but the local farmers and villagers. It seems the Saxon and Danish countrymen had free notions about using the forests, so from the time of William the Conqueror large tracts of English forestland were reserved for the use of the royalty and nobility.

But country people exercised age-old claims on the forest and its products. For example, it was an autumn custom for the swineherds to drive their herds into the forests, knocking the oak trees to bring down the acorns that fattened the swine for slaughter. If the forester caught them knocking the lord's oak trees, however, the swineherds might be summoned to court. Villagers gathering firewood prompted similar clashes.

"However," continues Forrester, "it was also the time-established right of the householders to collect their firewood in the forests, providing that the wood consisted of dead limbs. And so the rule came into being: field workers and shepherds could collect wood by 'hook or by crook' — using the farmer's weed hook or a shepherd's crook to collect the dead branches. But they were forbidden to do any cutting of living growth."

ACID RAIN

Lakes, salmon, forests and even concrete buildings are suffering in eastern Canada from what may be the most devastating pollution problem of the 1980s — acid rain.

Precipitation made acidic by sulfur dioxide or nitrogen oxides spewed into the atmosphere from automobiles, smelters and fossil-fueled power plants, has already eliminated fish populations in over 200 Ontario lakes. Evidence shows that forest growth may have slowed down because of the affect of acid rain on soil nutrients.

Fortunately, these silent ravages, so worrying to eastern North Americans, have yet to hit B.C. Prerequisites for the problem do not exist here in sufficiently damaging quantities. For acid rain to harm the environment, there first must be an upwind pollution source. Eastern North America, with its denser population, heavier industrialization and greater reliance on fossil-fueled power plants, has many such sources. (Ontario alone emits over six times the sulfur dioxide B.C. does.) The second criterion for an acidity problem is a delicate environment. Alkaline lakes and soils, such as those found in B.C.'s interior and across the prairies, have a built-in buffering capacity which allows them to tolerate acidic rainfall without dire results. Coastal B.C., however, is like the Canadian Shield in consisting of thin soils over granite bedrock which are easily affected by polluted precipitation. Although vulnerable, the west coast as yet receives little man-made, airborne pollution, and Environment Canada reports no sign of B.C. suffering from acid precipitation.

But the situation is not that clear-cut. Deluges have been recorded along our coast that are comparable in acidity to Ontario's noxious rainfall. Where the acid is coming from, no one knows for sure. But Environment Canada's Don Faulkner suggests that while some acid may be attributable to localized industrial sources, B.C. has probably always been the recipient of acid rain created from sulfur released naturally by our upwind neighbour, the Pacific Ocean. In the U.S. Pacific Northwest, however, industrially produced acid rain is a growing concern. Two major acid rain sources in Washington state are Centralia's coal-fired power plant and the ASARCO copper smelter in Tacoma.

Do you know any interesting facts about forests? Mail submissions to: ForesTalk — Collections, Information Services Branch, Ministry of Forests, 1450 Government St., Victoria, B.C. V8W 3E7. Information should be brief, accurate, and sources included where possible.

THE AXE MEN

It once took five men two days to cut down a big tree, using crosscut saws and double-bitted axes. These axes, the western logger's trademark from the 1890s onward, had narrow blades which the fallers kept razor-sharp. By chopping the right undercut so they could line the tall trees really true, a three-hundred-foot tree would fall exactly where it was aimed.

Before he did anything, however, the faller cut a wedge out of the two thick bars of the tree so he could put in springboards to stand on. The allowed him to cut higher up on the tree, where the trunk might be fifteen feet through. Often men then got busy with the misery whip, to saw the undercut. They needed a good balance, a long saw and plenty of oil. It took a long time to fell the large trees, but what fascinates sixty or seventy thousand loyal axe-men and hundreds more who never touch the handle of an axe is the art of hand-felling a giant conifer. Into the mystique, legend and the history of the axe-men have gone.

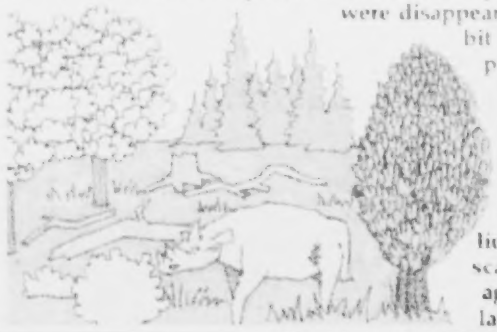
Today, the art of hand-felling is almost extinct. Into the mystique, legend and the history of the axe-men have gone. Allan Hountain of Victoria, recently published a how-to-do-it guide to the Axe, entitled "Chopper's Companion." Although great axe-men still exist, he writes, "the methods are quite different, and the majority of trees are felled using the chainsaw and the old axes have gone."

Pining Away

Using carbon dating and cell analysis of fossils, scientists have been able to assemble an account of the evolution of forests around the world. Through paleobotany, the study of plant fossils, we now know that much of B.C. was once covered in pine forests. There are several forest fossil sites in B.C., including the Smithers and Kitimat area in the northwest, around Lytton and Spence's Bridge in the southern interior, between Comox and Nanaimo on Vancouver Island, and in the Point Grey area of Vancouver.

The Point Grey peat bog contains a layer of pine pollen four to six thousand years old. This, along with other indicators, points to the fact that coastal B.C. once experienced a long spell of warm, dry weather. It took a subsequent change to cooler, moister conditions to produce the cedar-hemlock forests now growing there. Pollen also reveals much earlier forest history.

It seems the coniferous tree (cone-bearing evergreen) is quite old, having flourished in the dim past of the Cretaceous period, a time when dinosaurs were disappearing. Conifers have been in a bit of a slump since the Jurassic period, however, when the leafy angiosperm trees began to take over, thanks to the insect pollinators that evolved at about the same time. It took four ice ages (the first started about a million years ago; the last ended a scant twelve thousand years ago) to create today's forest landscape.



John Brennan

of the Bank of Nova Scotia

by **Peter Grant**

Idled mills. Layoffs. Lumber piled up.

B.C.'s lumber markets have slumped twice in the past two years. What's going on? Are the difficulties of the B.C. forest industry tied to the larger struggle with inflation around the world?

Who better to ask than the forest industry's banker? The man who finances the sawmilling operator has to keep a sharp eye on the big picture. And in the view of John Brennan, manager of the Bank of Nova Scotia's regional forest products department, the forest industry's current troubles are predictable, given its dependence on the North American housing market. But larger trends are afoot that will create more stable markets. Indeed, Brennan predicts a bright future for B.C.'s forest industry.

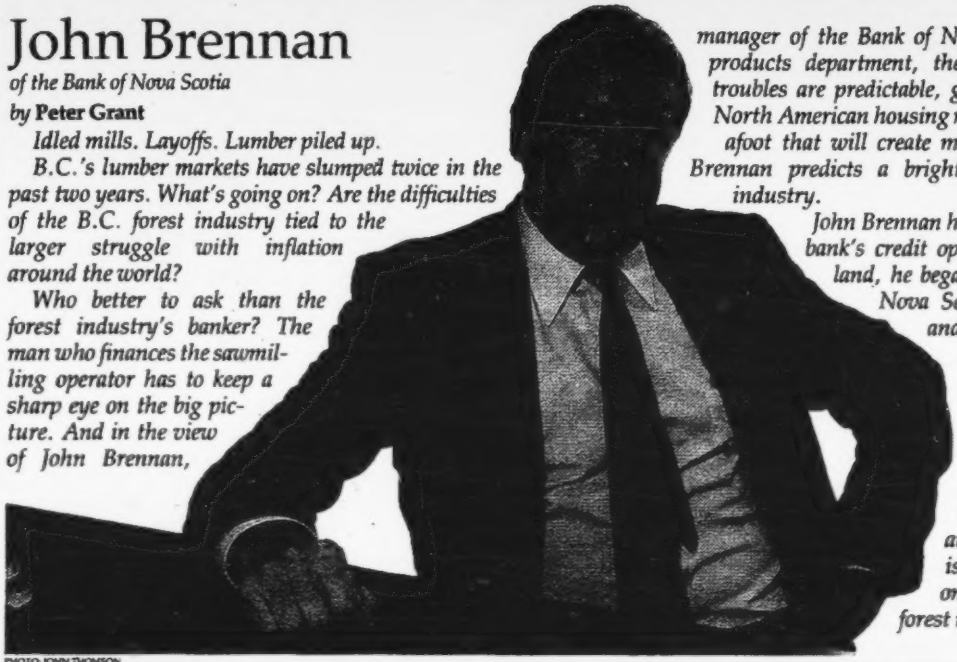


PHOTO: JOHN THOMSON

John Brennan has a broad background in his bank's credit operations. A native of England, he began his career in the Bank of Nova Scotia's Toronto head office, and after stints in New York and the Caribbean, moved to Vancouver five years ago. When the bank established its forestry department two years ago, Brennan became its manager. While professing to be only an amateur forester, Brennan is well positioned to comment on the financial side of B.C.'s forest industry.

FORESTALK: Why do forest industry operators come to you to borrow money?

BRENNAN: Two reasons: they borrow to finance their operating expenses — the normal day-to-day requirements of financing inventory and receivables. And they borrow for their capital programs, to upgrade and buy new equipment.

FORESTALK: What happens when the industry hits a slump? Do operators borrow more or less money?

BRENNAN: In times of good markets, customers will usually borrow up to their operating limits because they've got a lot of inventory and receivables to finance. When cash flows are good, people are more inclined to invest in plants and equipment.

But the demand for money doesn't dry up when things are bad. Sawmilling is increasingly a high technology industry. Mills have to upgrade regardless of the market. It's no good to leave your capital program because markets aren't good right now. A mill that lags behind technologically could rapidly become obsolete and unprofitable.

FORESTALK: Several companies have started multi-million dollar modernization programs. Will the current economic slowdown stop this development?

BRENNAN: I guess you mean the integrated companies — the MacMillan Bloedels and Crown Zellerbachs. They're insulated to some extent from the very sharp cycles the sawmilling industry experiences because they're into other things. Pulp and paper operators can carry lumber in a bad market and still make a profit.

"Lumber producers have to shell out a lot of money to make money. Since the wholesale markets slumped, the majority of mills are operating at no better than the breakeven point. Some are selling at well below cost."

FORESTALK: You're saying the demand for pulp doesn't follow the same cycles as for lumber?

BRENNAN: They don't follow the same cycles. Pulp markets have stayed fairly strong. Pulp and paper are much more diversified products than lumber. They're world commodities.

FORESTALK: What's the reason for the ups and downs of the sawmilling industry?

BRENNAN: Medium and small sawmill operators depend entirely on the lumber market, and some are even more specialized, depending entirely on the North American dimension lumber market. B.C. supplies something like 38 percent of all North American residential construction lumber. The construction market in the States dries up periodically because of changes in the availability of mortgage funds.

FORESTALK: Why do mortgage funds dry up?

BRENNAN: There's a huge mortgage fund "kitty." It fills up and gets used over a few years, causing a boom in housing starts. When it becomes depleted, there's a slump.

In the 1970s buying a house was a good deal. Mortgage rates in the U.S. were kept artificially low by government intervention, in effect giving homeowners a subsidized mortgage. There was also a lot of relatively cheap land coming on stream near population centres, so there was a lot of subdivision development. This created a healthy housing market, kept in check by the periodic drying up of mortgage funds.

FORESTALK: How does this boom and bust cycle affect the sawmill operator's ability to stay in business?

BRENNAN: It has forced a lot of small mills out of business or into the arms of bigger operations. The industry has changed a lot over the past two de-

cades. Twenty years ago there were four times as many mills as now, maybe more. The coast has always been dominated by major companies, but in the interior there were a lot of small bush operations.

FORESTALK: Several corporate takeovers have been in the news over the past two years. Were they part of the concentration you're talking about?

BRENNAN: I'd hesitate to say they were. The integrated industry is quite different from the small independent operations. The recent spate of takeovers — sales of assets, if you like — in the integrated sector was prompted more by the tremendous cost of building new facilities. It makes much more sense to buy an existing pulp mill, even if it's not in very good condition, than to find the five or six hundred million dollars for a new facility.

FORESTALK: Aren't the timber rights that go with these companies more attractive than the mills?

BRENNAN: Obviously quota timber is very valuable, and is probably the long-term justification for the high prices that have been paid for these companies' assets. But in the short term you can turn a buck pretty quickly by buying and using existing facilities.

FORESTALK: So how does a small operator stay independent these days?

BRENNAN: The operator who has to buy his timber on the open market is at a tremendous disadvantage compared to someone with a quota. That's also an important factor in evaluating credit, by the way: a banker is much more willing to take on a customer who has an assured long-term supply of timber.

FORESTALK: The Ministry of Forests' yield analyses project serious supply problems in some areas of B.C., yet some forest industry spokesmen say there's more timber available to cut. Which view do you accept?

BRENNAN: All that we bankers know about the state of the timber supply is from statistics put out by the government. They suggest there is a timber shortage, along with overcutting in certain areas. In the absence of another documented point of view, I agree with the government's position. I don't see where this other timber is. Certainly there has been waste in the past, and closer utilization can produce more timber. But the industry has a vested interest in cutting more wood to produce more profit.

FORESTALK: The industry critics say we could safely cut more timber if we spent a lot more money on silviculture than the ministry's current five-year program allows.

BRENNAN: I think that's true — but where does the money come from? A lot of revenue from the industry goes into the pot, the provincial treasury. Not all of it is put back into forestry. Should it be? It is a provincial resource. I don't think there's a good argument for chucking every penny of stumpage back into silviculture.

FORESTALK: Do you think the industry might be willing to pay more stumpage for forest management?

"A lot of revenue from the forest industry goes into the provincial treasury. Not all of it is put back into forestry. Should it be? I don't think there's a good argument for chucking every penny of stumpage back into silviculture."

BRENNAN: I've never heard of a company that wanted to pay more stumpage. I think the argument between the government and the industry is about how much revenue goes back to improving the forests, and I haven't heard that the industry is prepared to put up their ante. In fact, most operators are now paying minimum or near minimum stumpage.

FORESTALK: How much competition will there be for our forest products markets in the future?

BRENNAN: There's a worldwide fibre shortage. In Scandinavian countries there is no surplus softwood capacity. They are overcut, so they can't increase their production. The U.S.S.R. does have very extensive softwood reserves, but not the infrastructure to extract them. I don't see a lot of Russian wood coming into the markets. Since there's no substitute for wood at the moment, and I don't think there ever will be any, the demand has to be satisfied from limited available sources. So my analysis of the long term prospects is very, very good. There will be a much better return for producers than in the past.

And you know, traditionally the industry hasn't been very profitable.

FORESTALK: Why not?

BRENNAN: Because of the volatility of the market, and the tremendous capital expenditure required to stay competitive. Producers have had to shell out a lot of money to make money. Since the wholesale markets slumped, the majority of mills are operating at no better than the break-even point. Some are selling at well below cost.

FORESTALK: Do you have any insight into what's going to happen to the high interest rates that have troubled the forest industry — and almost everyone else?

BRENNAN: The days of cheap money are over. I think we'll learn to live with interest rates at the current level. What at first seems like a horrendous rate of interest doesn't seem so bad once it's been around for a year.

FORESTALK: How will the industry adjust to the situation?

BRENNAN: It's an add-on situation — a cost of doing business that they pass on. Even when rates were as high as twenty percent that didn't mean that trees weren't being cut or houses built. And if inflation is seen to be coming under control in the U.S., I can see interest rates stabilizing at sixteen or seventeen percent.

FORESTALK: Is B.C.'s lumber industry always going to have economic slumps?

BRENNAN: There's some evidence that the traditional cycle is changing permanently. Mortgage money isn't cheap any more, and it's likely to stay expensive. There won't be any freebies. Cheap land is also a thing of the past. Housing is going to become relatively more expensive — a larger item on most people's budgets, following the European pattern, probably. In certain European countries it's a rarity to own a house. Most people rent.

I think we won't see boom conditions again in the North American market. That doesn't mean the B.C. forest products industry has become redundant. I think we'll have a much more stable market in the future — slightly smaller in volume, but healthier and more predictable.

The Awakening Forest

by **Gary & Judy Green**

Spring arrives slowly with her subtle touch, transforming the snows of winter into a myriad of rushing streams. The snow line retreats through the forest; plant life responds to the long-awaited warmth.

Through the stark frames of deciduous trees the rich, life-giving sap flows to the tender buds. Sealed within the waxy bud scales are the tightly-folded leaves and flowers on miniature stems.

The buds, swollen with the water and food of the sap, break open; their minute leaves slowly unfold. It is not long before the bare tree branches are dressed in raiments of green.

In coniferous forests the arrival of spring most years finds the air filled with billions of pollen grains released from conelike male blossoms. Only a small portion of the pollen borne by the wind will ever reach its destination — female conelets. These develop into the familiar cones whose seeds will give rise to the next generation.

Several deciduous tree species sport flowers in spring, the most prominent being the large white blooms of the dogwood. Catkins of maple, alder, and cottonwood wave in the breeze; the pollen from these tassels are transmitted by wind or insect.

The new fronds of ferns uncurl on the forest floor, reaching for the dim sunlight that, once the leaves on the deciduous trees have emerged, barely penetrates through the trees. Bell flowers of the salal are alive with the hum of insects; wildflowers such as trillium highlight the forest understory.

Winter forgotten, the awakening forest once more salutes the cycle of rebirth.

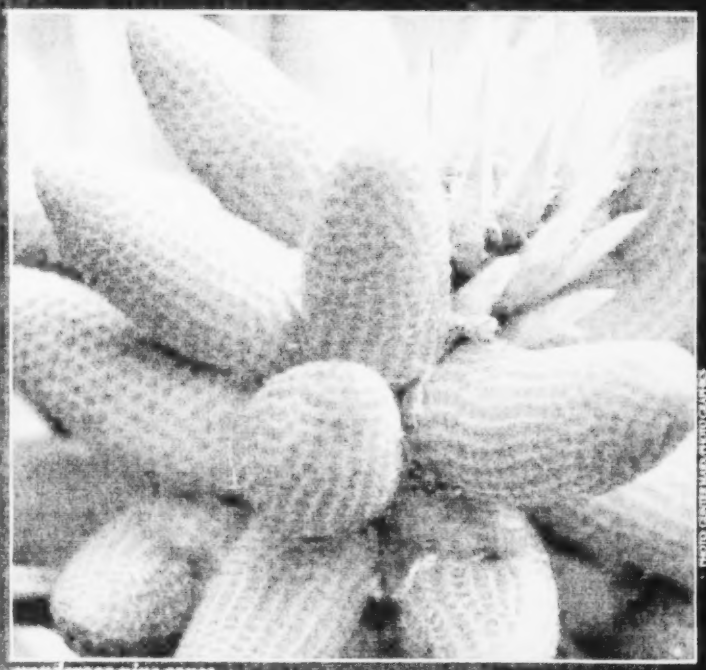
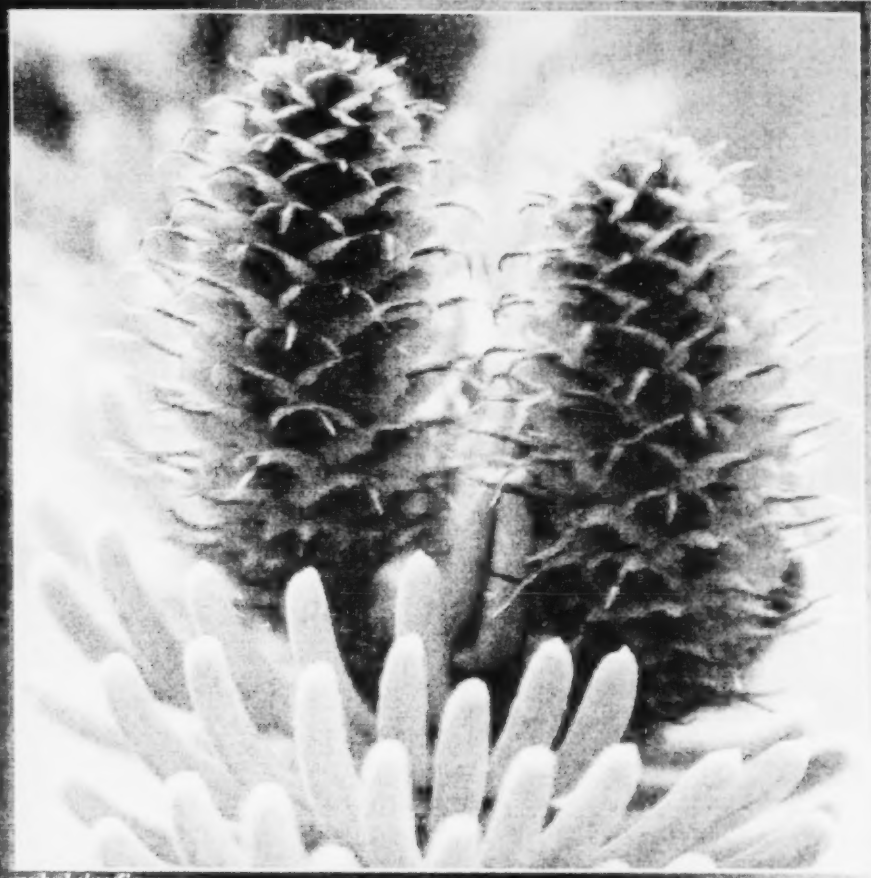


PHOTO GUNTER MARX PHOTOGRAPHICS

ponderosa pine cones

Indian plum

PHOTO MICHAEL MAHALL



subalpine fir cones

fiddlehead fern

TREEPLANTERS

by **Douglas Cowell**

(top) ***For a shivering Jeff Bumstead and the rest of Sydney Brannan's crew, the day-long barge ride to the head of Jervis Inlet marks the start of a new treeplanting season.*** *(opposite right)* ***Maureen Jansma smiles through the rain at a rugged treeplanting site in Kingcome Inlet.***

After two frenzied days of shopping, packing and working out last minute problems, the ragamuffin crew of treeplanters heads out across the Lions Gate bridge and up to Horseshoe Bay in time to catch the last Sunshine Coast ferry. They spend that rainy March night sleeping under tarps by the shoulder of the road.

Sara Huizinga, the indomitable gourmet cook, has hot breakfast and coffee ready by seven the next morning; by eight the crew is rolling into the still-sleepy village of Egmont. The barge they're meeting to take them up to their contract site at the head of Jervis Inlet is late. That gives Huizinga time to rouse the storekeeper and round up candles, butter and green peppers, items that somehow didn't get packed.

Jeff Bumstead reports that the three-quarter-ton truck is running rough and probably has carburetor trouble. Bob Loblaw is holed up under the marina porch, desperately trying to get his besmudged income tax forms in the mail before he disappears for the summer. Zooch, the myopic, epileptic Chihuahua, wanders off; a search party is struck.

Overseeing this travelling circus is Sydney Brannan, a Mayne Island sheep farmer. Things are going more or less as she expected — if not exactly as planned.

Two hours later Brannan's band of 20 planters is aboard a tiny open barge being towed through the rain and chop 80 kilometres into the heart of the Coast range. Bumstead is hunched over under the hood of the truck, rigging a carburetor gasket out of the back cover of someone's precious paperback novel. Old friends from around the province are catching up on a year's worth of gossip while the magnificent mountain scenery slides by.

Photography by **Douglas Co**

They land before dark. By the next evening a complete camp is set up. Jayce and Clive, just back from a barefoot winter in Hawaii, have built a six-person sauna — fired by a wood heater — where exhausted planters can wash up and relax after work. Outside, the old four-legged cast iron bathtub is dug into the riverbank. When the time comes a fire will be set under it to soothe the planters' aching backs and battered feet. Overhead, hung from a spreading alder by the riverbank, hangs a rope trapeze — perfect for launching steaming bodies into the deep, swirling pools of glacial water.

The cookshack, a 10-metre-long framework of poles covered with tarps and plastic sheeting, is the centre of camp. It is kitchen, dining room, rec room and lounge. Groggy planters will stumble in here at 5:30 every morning to huddle around the warmth of the woodstove. Throughout the days Hunzinga will bustle about preparing the meals. There are beds of oysters nearby, and the young fiddlehead ferns and nettles around the camp will provide salad greens and the ingredients for unique quiches. Long after some planter has taken his turn doing dishes, the chatter of a bridge game and the quiet sounds of guitars will drift off into the dark. The treeplanters are at home.

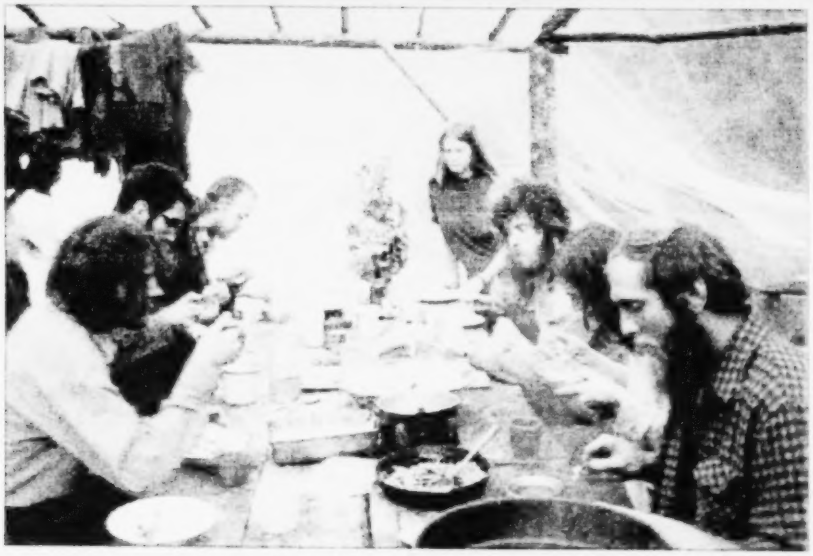
Treeplanting contracts are let by either the Ministry of Forests or private forest companies. treeplanting contractors bid on them competitively. A successful contractor tries to set up a chain of successive contracts so a crew can be hired on for the season. The contractor has to equip the camp and see that the contract is completed — all before anyone gets paid.

Day after day the planters trudge off to the slopes, dreading the rain, revelling in the sun and feeling their bodies harden up again after the winter. With over 20 kilograms of seedlings in bags on their hips, the

planters scramble up rocky bluffs and thrash through underbrush, carefully planting a tree every two and a half metres in the best soil available.

If the quality of the planting is less than 100 percent, the contractor's payment is reduced accordingly. If the planting quality dips under 85 percent, there's no payment at all. Experienced, trustworthy planters are hard to find, and once a planter finds a contractor he likes he sticks with him. Because they're being paid on a piecework basis, planters want to plant as fast as possible for as many hours a day as possible. There's no boss telling a planter when to work, how hard to work, and when to go home. The key is physical endurance. That one, or two, or occasionally three hundred dollars a day a good planter can earn does not come easily.

Pete Robson, planting coordinator with the Ministry of Forests in Victoria, has been working in the Silviculture Branch since 1964 and has been involved with the startling growth that has taken place in planting: "On the first planting projects I was involved in we used inmate labour. After that we hired whomever we could. We hired locals, hired off the reserves, got men from Main and Hastings in Vancouver. We paid by the hour and few had much interest in the job or much skill at it. Needless to say our production was low.



"By 1967 we decided to try letting a contract. We were not impressed with the results of the first one, but the next year we let a contract to two hippies — complete with bellowered Volkswagon van. They camped under plastic and planted faster than we'd ever seen. We were definitely impressed."

Those two hippies were to revolutionize treeplanting in the province. They led the way for a new breed of planters, people pursuing what was once called "alternative lifestyles." Almost overnight they redefined treeplanting. They made a game out of how hard they could work. Camping was fun. They brought their friends.

(double page) ***The harsh landscape of the Blume Creek region south of Fort Nelson challenges the will, and back, of a solitary treeplanter.***

(top) ***Covered with tarps and plastic sheeting, the multi-purpose treeplanters' cookshack is at once kitchen, rec room, lounge, and — most of all — a place to be warm and dry.***

(opposite left) ***Daryl Innis, Jim Crocco and Pete Lemon are working a site northwest of Fort St. John. They are part of Tawa Enterprises, a firm that does much of the planting in northern B.C. Its operations also extend into Alberta and Saskatchewan.***

their lovers, their kids and their dogs. Planting season was something to look forward to each year, a time of new adventures and new friends as well as good money.

Robson welcomed the new blood. "I found them honest, extremely hard working, and straight forward."

They were colourful people and their company names were equally colourful: Flatulence Reforestation, Pure Land and Human Hand, Armstrong, and Infantree.

(above) ***Jane Burns, Sue Legget and Chris McCready are three of the more than 200 Tawa planters, most of whom are university students earning next year's tuition. Tawa planters are divided into self-contained crews capable of spreading out across the north and simultaneously planting a number of contracts.***

These latter day pioneers already have a history all their own. Take the "Union Island Massacre," a spring planting contract that seemed to go on forever on a little island off the northwest coast of Vancouver Island. Day after weary day, icy, gale-force winds direct from Siberia drove stinging rain into the faces and numb hands of shivering planters. Word got out that the unmentionable might happen; they might not be able to finish the contract. Other planters, rather than avoiding the place, kept showing up on the float plane so that, although no one would make much money, everyone would get paid something and the contractor's reputation wouldn't be damaged.

In 1962 the total Ministry of Forests budget for silviculture, less administration costs, was $530,000. For the fiscal year 80-81 it was $64.2 million — more than a hundred-fold increase. In 1980 the Ministry of Forests embarked on a five-year program to double the number of trees planted annually; from March 1980 to March 1981 about 74 million seedlings were planted in the province. By 1985 the government and private forest companies will be planting 150 million trees each year.

It's anybody's guess how many planters it takes to plant all these trees. And just who these people are is about as hard to pin down. The largest single group is still the alternative lifestyle people, but there are students, religious groups, native Indian bands, ethnic groups and unemployed loggers.

One big-time contractor has a degree in religion. Another is a dropout nuclear engineer from the Atomic Energy Commission of Canada. There are homesteaders, craftspeople, artists, teachers, lots of carpenters and biologists, and at least one potato farmer. Tony Berniaz, mountaineer, world traveller and now a gentleman farmer, has probably planted a million trees; he used to be a Ph.D. biochemist. Holly Arntzen, a Vancouver musician, liked to wake the camp every morning with the golden sounds of Handel and Vivaldi played on her French horn.

A few large Vancouver Island logging companies have their own year-round forestry crews that also plant trees. Although the Ministry of Forests has gone over almost entirely to contracting out its planting, it still occasionally hires a local crew by the hour for a particular project, as do some small logging companies.

Tawa Enterprises, a Prince George-based company and one of the largest treeplanting firms in the province, recruits mostly students. "It's an ideal job for students," one of the young planters explains. "I can start work as soon as I'm out of classes in spring, and by early July I've made enough to go back next year."

Bruce Hawkenson, one of the four owners of the company, explains: "We work a shorter season than many contractors; we have never planted on the coast or in the southern interior. The snow is pretty well gone around here by the first of May, just as our planters are getting out of school. We work the northern part of B.C. and over into Alberta and Saskatchewan using several crews. It takes over 200 treeplanters to cover that much territory."

Hawkenson's appearance and personal style, like that of his three part-

ners, is conventional. His planters have the same cleancut look, and it is generally conceded that some foresters prefer to work with Tawa people rather than with some of the less conventional-looking planters.

Tawa is very much a business-like operation with considerable investment in equipment. It owns a fleet of all-terrain cycles, trail bikes, four-wheel drive trucks, and one large truck. Tawa planters are divided into self-contained crews capable of spreading out across the north and simultaneously planting a number of contracts. Each foreman hires his own crew. That means that a foreman who is a graduate student at Dalhousie University shows up with largely Dalhousie crew. Bob Rooney, a five-year Tawa veteran, is a skier from Banff. His crew is an amazing collection of skilled skiers, including international competitors Rob Sattrata and Mike Irwin.

The importance of silviculture to B.C.'s future and the ever-increasing size of silvicultural programs has not escaped the notice of B.C.'s largest forest industry union, the International Woodworkers of America (IWA). IWA president Jack Munro has predicted that it won't be long before there are as many people involved in silvicultural work as there are in logging.

In recent years IWA locals on Vancouver Island have insisted that contractors working in their areas be unionized, or at least come to an agreement with the local. They are now asking that all planting be done by union members province-wide.

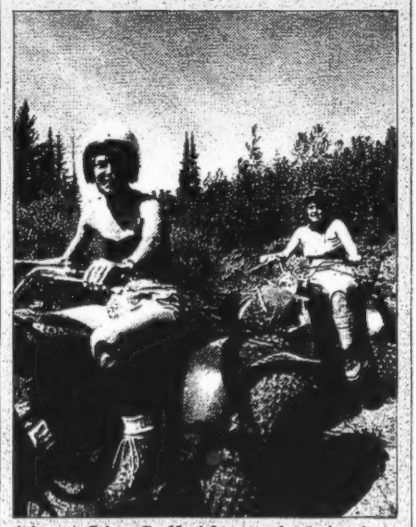
Clay Perry, Legislative Director for the IWA in Vancouver, explains: "Because of the strategic importance of silviculture to the future of the industry, it has to be organized in a rational way and give people a rational lifestyle. It's just not rational for the province to rely on 'counterculture' people for such crucial work."

Partially in reaction to the IWA, a number of planters formed the Pacific Reforestation Workers' Association (PRWA) in 1978. Besides relating to the union, the association has worked with the Ministry of Forests to modify contract procedures, negotiated with the Ministry a dispute regarding the use of fungicides on tree seedlings which they feel affect planters' health, and generally forwarded the interest of silvicultural workers. Last year a contractors' association, comprised

(below) ***On the side of a cliff at Jervis Inlet, treeplanter Jim Palmer finds a pocket of soil big enough to grow a tree in.***

(bottom) ***Treeplanters look like mountain goats on this unforgiving hillside at Kingcome Inlet. Here rotten cedar and hemlock had to be knocked down before the planters could move in.***

Growth Industry



(above) ***Lise Gall rides to the left of Marion Rice.***

What's happening to the millions of hectares of land that have been deforested by logging and by forest fires? On areas that have been planted, how successful was the planting? On areas left for natural regeneration, how many trees per hectare are growing there? Is planting required; or spacing? Getting the answers to these questions is the job of B.C.'s "regen survey" crews.

Lise Gall and Marion Rice, two Ministry of Forests regen workers, are hungry and tired after a day of inspecting cutblocks on foot. Munching on a supper quickly rustled up over a campfire, they fill out their report forms and colour in their maps before the daylight fades. They fuel up their all-terrain motorcycles, make their daily radio check back to Fort St. John, and head for a bath in a nearby beaver pond.

"I really like living out in the bush," says 19-year-old Rice, who is trained as an agricultural technician and hopes to work in the range management section of the Ministry. "I don't even mind the bugs. You get used to them. What I can't stand is office work."

This is the fifth summer 27-year-old Lise Gall has worked for the Ministry. "I love the life, the independence, working out here on our own. The rest of the year I'm a housewife." Neither woman is in a hurry for the summer to end.

largely of PRWA members, was also formed to further the particular interests of contractors. The two organizations more or less see themselves as sister groups.

Dirk Brinkman, with 280 planters and a gross of $2.5 million in 1981, is B.C.'s largest planting contractor. He is also chairman of the legal committee on the PRWA. Brinkman opposes unionization, but concedes: "The early IWA organizers worked long and hard to get decent living conditions for loggers. When they see our planters living in tents it's like waving a red flag at a bull. But not only is it a logistic necessity to use tent camps to move all over B.C. and Alberta doing short-term contracts in remote places, it's also part of our lifestyle.

"Unions are built on worker-employer antagonism, but I try never to hire anyone who isn't either a friend of mine, or a friend of a friend. We get back together every year. Couples come planting and bring their children. You can't do that kind of thing in a logging camp.

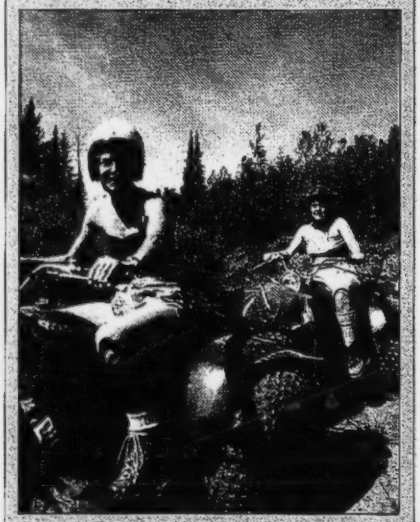
"Besides, planting is a snowline industry. You have to plant an area as soon as the snow melts. By being nomadic contractors we can begin on Vancouver Island in February and work through to northern B.C. and Alberta in June and July, and then do a bit in the fall. We are skilled, professional planters. The union seems to regard it as unskilled work. Nor could I ever get my people to plant for union wages. They earn on the average about $150 to $160 a day; union rates work out to around $120."

"Don't get us wrong," Perry counters. "The IWA isn't interested in shaving beards. But silviculture is among the most strategic functions of the B.C. economy. If it were undertaken on the same scale as it is in Sweden — as it should be — it would require an estimated 25,000 additional people. Treeplanting is just too critical an enterprise to be organized so that only people who do not object to living in tents will want to do it.

"There's no need for planters to travel around like Bedouins. A guy can set chokers part of the time and plant trees the rest. Also, when jobs are scarce a guy who's invested 30 years of his life in the forest industry has a claim on work that 18-year-old college kids do not."

Back in Jervis Inlet it's the last day of planting and there are only 12,000 trees left to go. Huizinga is busy in the cookshack kneading dough for sweetbreads and cookies for the party that evening. A planter, taking the day off, returns from the beach with a pot of fresh-shucked oysters and announces that two prawn fisherman tied up at the wharf will attend and bring a bucket of fresh prawns. An apronful of young nettles waits on the table to become "Quiche Jervis." A secret stash of beer is cooling in the creek. Soon, the driving rain and rocky ground, the aching back and sore feet will be forgotten. It will be a night to remember.

(below) ***Led by five-year planting veteran Bob Rooney in his "Head" hat, this crack Tawa treeplanting team consists mainly of expert skiers from Banff.***



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"There's no need for planters to travel around like Bedouins. A guy can set chokers part of the time and plant trees the rest. Also, when jobs are scarce a guy who's invested 30 years of his life in the forest industry has a claim on work that 18-year-old college kids do not."

Back in Jervis Inlet it's the last day of planting and there are only 12,000 trees left to go. Huizinga is busy in the cookshack kneading dough for sweetbreads and cookies for the party that evening. A planter, taking the day off, returns from the beach with a pot of fresh-shucked oysters and announces that two prawn fisherman tied up at the wharf will attend and bring a bucket of fresh prawns. An apronful of young nettles waits on the table to become "Quiche Jervis." A secret stash of beer is cooling in the creek. Soon, the driving rain and rocky ground, the aching back and sore feet will be forgotten. It will be a night to remember.

(below) ***Led by five-year planting veteran Bob Rooney in his "Head" hat, this crack Tawa treeplanting team consists mainly of expert skiers from Banff.***

LETTERS

The Pros and Cons of Wood As Energy

Congratulations to Peter Grant for providing the most well-balanced popular article on the subject of wood for energy that I have yet seen (*ForesTalk*, Winter 1981). Unlike less fortunate countries and provinces, our wealth of fossil fuels, combined with our industrial utilization of residues for mill fuels and fibre, makes wood uneconomic as a major energy source in the non-forestry sector of our economy. However, wood products can be produced for a fraction of the energy input required of other building materials. Perhaps we should concentrate on more efficient production and use of these products to make wood more competitive with other structural materials requiring more energy to manufacture.

R.W. Kennedy
Professor of Wood Science
and Industry
The University of B.C.
Vancouver, B.C.

Good reading in Peter Grant's Skoglandia story ("Is Wood The Answer To Our Energy Needs" *ForesTalk* Winter 1981), but what on earth are those two cooling towers doing in the steam power illustration on page 18? Really, the cooling towers of yesterday represent perhaps one of the most horrendous example of energy wastage. Anybody incorporating such an antedeluvian device in 2011 would be shot. Heat exchangers, yes. Cooling towers or device, no no no.

Dudley Wingfield
Bournemouth, England

Peter Grant's article, "Is Wood the Answer to Our Energy Needs" in the Winter 1981 issue is somewhat misleading to conclude that: "abundant supplies of hydro-electric power and natural gas make it more economic to continue buying these energy supplies rather than switching to wood." The current domestic rates for natural gas and electricity do not reflect long term replacement cost (marginal cost). Additionally, these rates do not incorporate factors for the non-renewable nature of natural gas nor, in the case of hydro-electricity, the social opportunity cost of resources foregone. To calculate and compare energy options properly requires placing the options on an equal footing; the marginal cost of hydro electricity should be compared to that of wood for energy, and the comparison should also include other long term social, economic and environmental costs and benefits.

In their study, "Electricity Generation From Wood Wastes in B.C.," Margolick and Helliwell conclude that the total provincial wood waste supply could provide some 2,800 million kwh at nine interior mills. Together with unrecovered co-generation at non-interior mills, this would exceed the full output of the proposed Site C dam on the Peace River. Cooperation between the federal government, provincial government, B.C. Hydro and the forest industry in investing in wood energy technology, which requires substantial less capital per kw installed capacity than a hydro-electric dam, would demonstrate much needed prudence towards the stewardship of our natural resources.

E.W. Kok
Fort St. John

Nixon Challenges Critic

In his letter to *ForesTalk*, Winter 1981, D.E. McMullan says that my statements in "ForesTalk Interviews," Summer 1981, misrepresented the forest industry's position with regards to wildlife management. But when industry claims it will implement wildlife protection which it "knows to be in the public's best interest," I worry. For it is the Ministry of Forests, if we indeed believe in democracy, who must serve as the public guardian of the public's forests. And, through broad public consultation, it is our elected representatives, not industry, who will insure that the public interest is well served. Yet, at present, Forest Service field personnel lack sufficient authority to protect the public's forests. Ministry staff are given few specific directions on the protection of wildlife and their habitat. Local field decisions must often be cleared through several layers of higher authority, and industry quickly challenges Forest Service field staff, often forcing reviews at higher levels within the Ministry over seemingly minor local level decisions. In such a climate, it is difficult to accept McMullin's call for a "team approach" to the management of wildlife.

Robert W. Nixon
Conservation Chairman, Forester
The Sierra Club of Western Canada

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ForesTalk, Ministry of Forests
Information Services Branch
1450 Government St.
Victoria, B.C. V8W 3E7
telephone 387-5985

If you are requesting a change of address, please give us your former address; better still, send in the old mailing label.

Sorry, Wrong Number

There is an error in numbers in "ForesTalk Interviews Bruce Devitt" in the Winter 1981 issue of *ForesTalk*. On the coast we are looking to grow and harvest 600 - 700 cubic metres of wood per hectare over 50 to 60 years. The 150 cubic metre figure attributed to me in the interview obviously is wrong.

The mean annual growth rate of an extensively managed coastal Douglas fir forest on an average site is about seven cubic metres per hectare, which means it would take 90-100 years to grow the volumes, sizes, and values needed. The annual growth rate for an intensively managed forest would be 14 cubic metres and the needed wood could be available in 50 years. The wood will of course be smaller than we are used to in our old growth forests, but there would be less variation in log sizes and the logs should be easier to handle. I hope this clarifies and corrects the error.

Bruce Devitt, Chief Forester
Pacific Forest Products Limited

ForesTalk *apologizes for having so completely mixed up Mr. Devitt's figures.*

Not Just Fun in the Bush

I have just finished reading the "Loggers In Winter" article in the Winter 1981 issue of *ForesTalk*. Not only was I impressed with the amount of information it gave me on the life style of a logger, but also the time and effort a logger puts into our forests is tremendous. Every job has its difficulties, and after reading the article I suddenly realized that a logger's life isn't just "having fun in the bush." The article really expressed the logger's daily routine during a busy winter, and it makes us all stop and think a minute about how much risk a logger runs to provide us with two of our major assets, shelter and heat.

Lexie May
100 Mile House Junior Secondary

For the Record

The caption on the inside front cover of the Summer 1981 issue of ForesTalk *makes mention of a "peevee" to move logs. Being named after its inventor, the late Joseph Peavey of Bangor, Maine, the tool is properly spelled "peavey."*

The back page feature on western red cedar in the Fall 1981 issue of ForesTalk *states: "About 90 percent of the red cedar cut in B.C. is used to make shingles and shakes." In fact, much of B.C.'s cedar is made into lumber; shakes and shingles consume no more than 40 percent of the province's cedar harvest.*

Letters to the editor provide an opportunity for our readers to discuss topics arising out of ForesTalk. Letters for publication must carry the sender's name and address. Views published are not necessarily endorsed editorially. ForesTalk reserves the right to edit for publication.

People

Ray Van Steinburg

by **Anne Edwards**

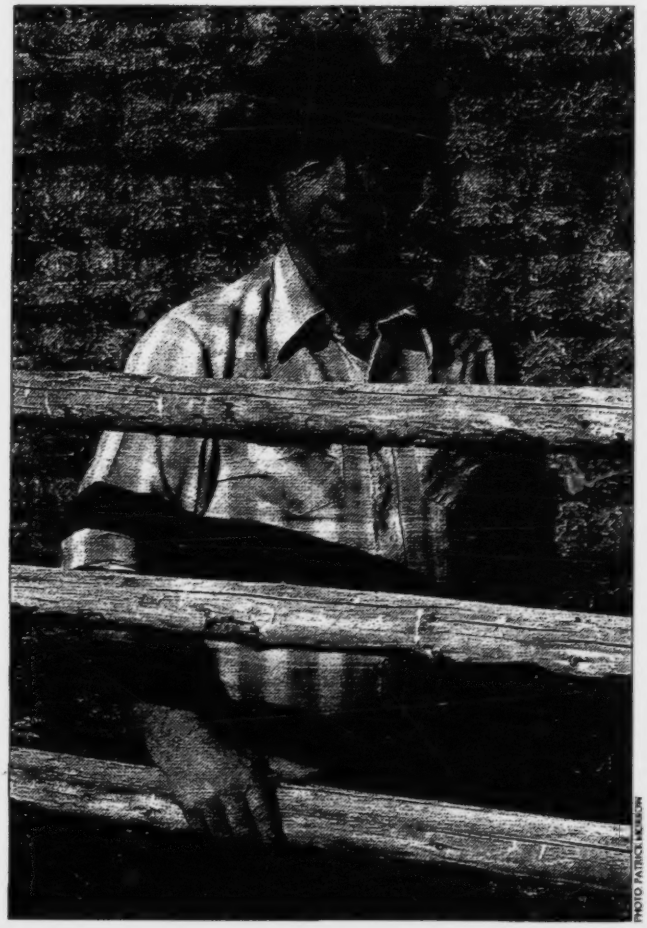


PHOTO PATRICK HERRON

He grows cereal crops where they said it couldn't be done, he raises prize winning cattle on some of B.C.'s best managed Crown rangeland, and he's been Kootenay rancher of the year; not bad going for a former taxi driver.

Ray Van Steinburg says his ranch is located in the best cattle country he's ever seen. He'll tell you that for the past 20 years his cattle's average daily weight gain has improved every year, and he expects it to continue that way. He says the East Kootenay could double its production of beef cattle "in a very short time, just with better management." And he says his life style is worth gold: "People pay all sorts of money for what ranching offers as a way of life."

Neighbours and government resource managers who work with Van Steinburg won't contradict him; they just hem and haw a bit and say: "Ray's an optimist. Just because he can do it doesn't mean everybody can."

What Ray can do is to operate B.C.'s second largest registered purebred Hereford seed stock operation — in country described for decades by resource managers as marginal for agriculture. He does it efficiently and without friction, in an area where resource conflicts often run as high as the mountains.

On his 800-hectare Pine Butte Ranch at Wycliffe near Cranbrook, Van Steinburg runs a herd of about 200 cows and calves and 50 to 60 bulls. Along with eight other ranchers he shares Crown range which boasts the highest cattle stocking rate in the province. (All Crown rangeland is administered by the Ministry of Forests, and the ministry determines how many cattle a given range can hold without danger of being overgrazed.)

When Van Steinburg moved to the Pine Butte in 1951, he found that the previous owner had cultivated cereal crops. Ray decided to grow alfalfa, but the district agriculturist looked at the ground, kicked the rocks, consulted the soil maps and said it couldn't be done. Ray chuckles as he remembers the quote from the district agriculturist the day Van Steinburg's alfalfa crop was being inspected by a feed grain specialist from the University of British Columbia and two researchers from the Summerland Experimental Station: "Contrary to all our publications," he said, "you seem to be growing alfalfa on this land."

The mood of the ranch is easy and pleasant. Out on the Crown range on a blistering day when the cattle are seeking the shade and cogitating, all Ray has to do is call, "Come on! Come on!" to have 30 animals competing for the morsels of hay he scatters about so they won't think he called for nothing. Then he scratches their backs — range cattle who have never spent an hour in a barn. "We get rid of the rebels; we

PHOTO: PATRICK MORROW

PHOTO: PATRICK MORROW

want a happy herd," says Ray, and then with a wry grin, "We like to work with them, and we like them to work with us." Contentment fosters better weight gain. "You master them, but be good to them. They respond."

The Crown range is in magnificent shape, thanks partly to the good 1981 rains, but also thanks to the work Ray and the other ranchers of the area have put into it. He and the eight others had been doing things like cross-fencing to get better pasture rotation even before Coordinated Range Management Planning came into existence in B.C. in 1975.

Under coordinated planning, all the users in a management unit meet annually to hammer out a resource-use plan with the various resource ministries. The land users in Van Steinburg's unit include the nine ranchers, two or three minor logging operations, wildlife and recreationists.

"We had a good association and range management plan going before coordinated planning," says Van Steinburg, "but since ARDA, the range has definitely improved." ARDA is the federal-provincial Agricultural and Rural Development Agreement, which financed coordinated planning measures such as the installation of fences, gates and corrals, tree spacing, grass seeding, debris clean-up, and even the building of birdhouses. Coordinated planning also helped cross-country skiers, snowmobilers and horseback riders make good use of the rangeland; and, because of improved range management, game animals can now find more winter forage.

"When coordinated planning started, the government range managers were very tight, regardless of Mother Nature or the cow. We're beginning to see more flexibility. That's good. Ranchers are individuals — generally hardened cases. Independent as hell."

Van Steinburg is the son of a Saskatchewan farmer who moved to Creston during the depression. Ray worked on area ranches, went overseas during the war and came back to run a taxi business. He then went on to rent a ranch, buying it out later.

He started with a commercial beef cattle operation, but bit by bit got into the business of raising breeding stock instead. By 1976, his was a seed stock ranch, using Herefords, the world's most popular breed for beef cattle. "They're still proving every day they can convert grass to beef better than any other breed, and they're adaptable and docile."

Van Steinburg's Herefords repay his faith in them many times over. They set a record at the 1981 spring bull show in Kamloops, ambling away with eight top prizes and nearly sweeping the slate. His bulls have placed very welll in four of the past five years he has taken calves to the B.C. Test Centre at Tranquille; one was only a sliver away from a world record. His cows do well, picking up rosettes and silver trays just about everywhere.

Not to be outdone, Van Steinburg himself has been honoured for his involvement in community organizations. He has served on many ranching associations in the East Kootenay, having been involved in setting up several of them in the first place, and he currently sits on the B.C. Hereford Breeders' Association. In 1973 he was the second man ever to be named Rancher of the Year by the Kootenay Livestock Association.

Ray's business card shows that his ranch is a family operation: *Pine Butte Ranch, Ray and Mae Van Steinburg and Family*. The family includes son Ron, 17, and daughters Kathryn, 16, and Lynette, 11. All of them share the work, the record-keeping, and the rewards. So do three ranch-hands, long-time employees in an industry that often deals with highly itinerant workers. One has been with Ray for 27 years, the other two for 10 and four years.

Managing employees is another subject on which Ray has been asked to speak at conferences. He says, "I give everybody — sometimes make them take — responsibility, and I make sure they see the economics of what we're doing." He also lets each employee run up to 10 head of his own cattle with Ray's herd.

Although Van Steinburg has done well in a difficult business, his greatest rewards are not monetary. "We want health, happiness and the opportunity to do something for other people," he says. "I think we're doing something just by growing better cattle. We Canadians should not depend for our food on somebody else's surplus." And he goes on to tell you his idea that beef production should be increased in the East Kootenay so that more prairie land can be used for cereal crops, making the whole country's food production more efficient.

It's clear that Ray Van Steinburg has no reason not to be feeling optimistic.

Joe Braisher has grown up with the idea that "every farm would do well to have a woodlot." For Braisher, the 180-hectare woodlot on his ranch near Golden is like money in the bank: "In the winter you've got that free time, so if you can make a little money doing the logging, it helps you pay the bills next summer."

Early homesteaders relied on their woodlots for firewood, building materials and the occasional cash sale. While in many parts of the world the rural woodlot is still an important part of the farm economy, in British Columbia, where most of the 52 million hectares of forestland belongs to the Crown, small private holdings have always seemed insignificant by comparison. Still there are an estimated 1.6 million hectares of private forestland that don't fall under some form of government supervision, and as pressure from agricultural, residential and other uses continues to reduce the B.C. forestland base, both the Ministry of Forests and Ministry of Agriculture have been looking at these private woodlots as a means of expanding farm income and preserving valuable timber.

"Woodlots can't help but make good sense," claims Joe Braisher. "You can't plow your land from corner to corner. You've got to pick the best patches, and the rest might as well be growing trees."

BACKYARD SILVICULTURE

by **Judith Alldritt**

On the family woodlot adjoining their farm outside of Golden *(left),* ***the Braishers have practised an effective form of sustained yield silviculture for over 60 years. "It would never pay to strip this land," says Joe*** *(opposite left holding an injured calf).* ***"You might make a quick fortune from the timber, but that would be it. You'd have nothing for 100 years."***

Joe recently took over his father's farm, and with it Ormond Braisher's Ministry of Forests' farm woodlot license. This gives the Braishers responsibility for managing 75 hectares of Crown land in conjunction with their own 105-hectare woodlot, and they've been harvesting up to 100,000 board feet annually for more than 25 years. Yet the forest seems virtually untouched by the logging activity that has gone on steadily through three generations of Braishers; in fact, says Ormond Braisher (who remembers the farm as it was nearly 60 years ago when it belonged to his father), the privately owned stands are in better condition today than the Crown timber "because they have been managed longer."

The Braishers have always practised a simple but effective form of sustained yield silviculture. "We just pick a few trees here and there to thin out the bush and give the little ones a chance," says Joe. The Braishers long ago harvested the last of the mature Douglas firs; now the woodlot is primarily second growth fir of mixed size and age and therefore best suited for selective logging. In order to protect the site, the Braishers log with rubber-tired equipment. They clearcut only if a stand becomes infected with root-rot or other diseases, and they log only in winter.

"We're farmers, not loggers," says Ormond, "so we never log on bare ground. The woodlot was never intended to provide a living, only a supplement to the farm. And it's sustained yield, so we always have it, you see."

Farming woodlots means taking the long view, and at 30, Joe Braisher's already thinking about the next generation. "Over the same period of time, tree land will never produce what agricultural land will produce on a per acre basis," says Joe. "On the other hand, it would never pay to strip this land because most of it's not good enough for grass. You might make a quick fortune from the timber, but that would be it. You'd have nothing more for 100 years."

Not all private forestry is an offshoot of farming. For landowners like Reg Rigby and Robin King on Vancouver Island, small scale private forestry has been a way of life. Rigby owns nearly 80 hectares near Duncan; King owns another 120 hectares nearby. Both have small mills which, fed largely by their own timber, have been their main source of income for over a quarter of a century. Both have done a steady business producing such things as railroad ties, fence posts and lumber. "I used to log for a week and mill for a week," explains Rigby, who is now semi-retired. "I suppose we made it a success, but the life didn't involve many luxuries.

"In the beginning I didn't realize that a new forest grows so quickly," Rigby adds. "Two or three times in a man's lifetime if it's well managed." Robin King claims he always had plenty of wood, despite the fact that his land had been logged previously. "I'm cutting a forest now that has matured in the 40 years since I've been here," says King, who believes intensive forestry "is mostly just common sense." King claims it is most important not to burn off the slash after logging; the debris provides humus to feed the growing forests. For Rigby, good forestry is a debt owed to future generations: "For my own piece of mind I want to leave behind a forest when I die, not a bunch of stumps."

Unfortunately, not all private landowners share Rigby's and King's attitudes toward forest management. "I'm very concerned about the lack of management on a large percent of private timber holdings," says Ray Addison of the Ministry of Forests' Strategic Studies Branch. "Private forests are being

Darkwoods

by **Doug Cowell**

PHOTO DOUGLAS COWELL

***Roland Meyer** (above) is a forest technician with Darkwoods, a private forest estate near Nelson owned by a West German royal family. The atmosphere here is definitely European.*

Darkwoods Forestry Ltd. is a small forest management firm near Nelson that is unlike anything else in the province. The four-person company manages 65,000 hectares of land located between Salmo and Creston, but is owned by a West German royal family known as the Royal Chambers of the House of Württemberg. This land has been in private hands since 1889, and was purchased by its latest owner from a U.S. forestry company in the late 1960s.

Forsthaus, the company headquarters, looks not unlike a German hunting lodge, complete with staghorn door handle. Inside the atmosphere is definitely European, formal but friendly. Shirts, ties, loden green jackets, sometimes even knickers are the preferred dress.

In Germany, foresters traditionally have been held in high regard. The director of Darkwoods, Mr. H. Tschechne (dressed immaculately in forest green), comes from an old, respected family of foresters.

"The founder of the Forest Academy of Everswalde, from which I graduated, was asked by his students in 1830 for a general rule. 'Yes,' he said, 'There is only one general rule in forestry and that is that there is none.'

"That's my approach. Every stand is different and constantly changing. What good is a long-range logging program if tomorrow we have windfall and the next day we have the spruce bark beetle?"

Darkwoods has neither sawmills nor logging equipment. It either hires local contractors to harvest the timber and then sells it on the open market, or else it sells the standing timber itself. Tschechne says he is therefore free to concentrate on land management for which, since it is private land, he is totally responsible. He has a 12-hectare experimental forest and has recently compiled a summary of all living things found throughout his holdings.

"The return on our investors' money is small, but they are an old European family which has been involved in forestry for hundreds of years. Looking ahead a hundred years is easy for them."

harvested at three to four times their sustained yield level; others are being sold, logged and then abandoned.

According to Conrad "Corky" Evans, an independent logging contractor and resource critic from Winlaw who also serves as Director of the Central Kootenay Regional District, the most damaging practice on both public and private land in the Slocan Valley in the East Kootenay where he lives has been "high-grading." By removing the best trees and leaving the forest to regenerate from inferior stock, high-grading produces a forest dominated for years by stunted softwoods and fast-growing, non-merchantable hardwood species.

"The oldtimers were right in their notion that selective logging was the way to get the most volume of timber per acre in their lifetime," says Evans, "but they had it wrong genetically. Taking the biggest trees and leaving the smallest is like killing your fattest pig and raising the runt."

Evans' own experience as a logger indicates that intensive management according to site-specific principles can often repair the effects of high-grading. However, the process of repair can be costly and the owner is unlikely to see any profit for decades. For this reason, Evans would like to have an extension forester in the area

(top left) ***Practising backyard silviculture means taking the long view, and Ormond Brasher has passed down to son Joe a well managed woodlot capable of providing 100,000 board feet of lumber annually.***
(left and top right) ***Corky Evans, a Winlaw logging contractor and regional politician, is particularly concerned with "high grading" — cutting the best trees for a profit at the expense of long range forest productivity.***

who could help local landowners understand the management principles which apply to small scale silviculture.

The best help a small scale private forest manager can get, says Ray Addison of the Ministry of Forests, is advice on how to market his trees. Addison believes that marketing knowledge is the key to getting individuals involved in managing their private timber holdings. Corky Evans agrees, and explains how he marketed the timber from a site he logged recently: "We sold the white pine to a company in Salmo, the poles to a company in Nakusp, the small fir and larch, chip and saw logs to Slocan Forest Products, and the tie logs and hemlock to a local tie mill. And that," he adds wryly, "is the only way we could afford to do this kind of pretty logging."

Timber Officer Rod McLeod in the Ministry of Forests Regional Office in Nelson adds this perspective: "In eastern North America and in Sweden and Finland, it seems to be the pulp economy that sustains the woodlots. If we had an integrated utilization picture in the forest industry here, it would probably help." MacLeod believes support for woodlots could benefit the forest industry as a whole by providing "a free sample" of different kinds of intensive forestry.

University of British Columbia economics professor and distinguished forester Dr. Peter Pearse shares the enthusiasm for woodlots. In his 1976 Royal Commission report on forestry, Pearse recommended a program that would put Crown land woodlots under small scale private management. That recommendation showed up in the 1978 Forest Act as part of the Ministry's new small business program. These new woodlot licences also replace the Ministry's old farm-woodlot licences (such as the one held by the Braishers), where parcels of private land and neighbouring Crown land were merged into small sustained yield management units.

According to Pearse, the new Crown woodlots are most likely to be small, isolated parcels too awkward for the government itself to manage. "That's where there is a great potential gain to be had from small scale private management. There are many small tracts of Crown forestland that would be very suitable for woodlots in the more settled areas of the coastal mainland and offshore islands, as well as in the interior."

Like Rod McLeod, Pearse thinks woodlots can provide an opportunity to experiment with a variety of forestry practices. Says Pearse: "One of the problems in B.C. is that so much of our land is owned and administered by a single level of government. As a result you tend to get uniform regulations over a wide range of conditions, instead of regulations best suited to the circumstances of particular forest sites."

It also follows that similar sites can be managed differently to suit the quite different needs of production forestry and woodlot silviculture. For example, on a hill overlooking Reg Rigby's house on Vancouver Island a forest products company recently clearcut 50 hectares which it had purchased from Rigby 25 years ago. The company is replanting the hillside with select seedlings that should produce a commercially valuable harvest in 50 years or less; Rigby's private land adjacent to the clearcut is a mixed forest of second growth Douglas fir, hemlock, cedar, alder and maple.

Pearse not only believes in encouraging small scale private forestry operations in order to get "a better balance" within the industry, he has also entered the field himself. Pearse is a managing partner in a company called the Sallas Forest Limited Partnership, which recently acquired Sidney Island, the largest of the remaining undeveloped Gulf Islands. The company has applied for a licence for what is called a taxation tree farm. The intention is to manage the island's nearly 800 hectares of timber on a sustained yield basis.

Pearse considers the purchase of Sidney Island an opportunity to put some of his own theories into practice. "What we really want to do is turn Sidney Island into a demonstration forest, to show that the practice of private forestry on a modest scale can be economically viable."

Timber Officer Rod McLeod thinks the success of woodlots will depend on individual interest and commitment. "No one should count on getting rich running a woodlot," says McLeod. In terms of government support, he says, "an extension service is

(opposite right) ***As with this Slocan Valley farm, a small scale woodlot and farming go well together. For Robin King of Duncan*** *(opposite top)*, ***small scale forestry and sawmilling has been a way of life for over 25 years. Small scale forestry differs greatly from the large scale variety with its clearcuts*** *(right)*, ***and woodlot managers could make good use of a forestry education program designed to meet their particular needs.***

the way to go."

In states like Washington and Oregon and in provinces like Nova Scotia, New Brunswick and Ontario, where sometimes up to 50 percent of the standing timber is privately owned, governments support sustained yield management on private land through incentive programs and education extension services. In California, private land forestry is actually regulated by legislation.

In Victoria, Ray Addison of the Ministry of Forests thinks an extension service is a more attractive option than direct regulation or government subsidies. Jim Anderson of the Farmland Resources Branch of the Ministry of Agriculture agrees. "We're interested in woodlots because they could provide for balanced multiple-use of land as well as a secondary source of income for farmers," says Anderson. "We're willing to cooperate with the Ministry of Forests on a plan that would provide farmers with information about a specialized kind of silviculture that's applicable to small scale operators."

In British Columbia, the government and the public are beginning to realize that woodlots can be a valuable resource, particularly in places like the Nelson area, where over 65 percent of private forestland is on good or medium-quality sites. Although some have yet to be convinced, as Corky Evans puts it, that "farmers can learn to farm trees as well as pigs," the time now seems ripe to offer public education in the long-term benefits of woodlot culture.

Small Scale Forestry Program

The Ministry of Forests recently announced the creation of a small scale forestry program aimed at developing the potential timber harvest on B.C.'s 1.6 million hectares of private forestland. The program's central component will be a ministry extension service that will advise landowners on how to manage their forests, how to harvest the wood or have it harvested, and on what their timber is worth and where to sell it. This new extension service will also provide support to the holders of the new woodlot licences soon to be issued under the small business enterprises program. It is estimated that if even 20 percent of B.C.'s private forestlands can be brought into a well-managed state, the sustained timber yield would be about 1.4 million cubic metres annually. That's roughly equivalent to the yield from two and a half average-sized Tree Farm Licences.

dandelions
PHOTO: BOB HERGER/PHOTO GRAPHICS

FOREST HABITAT

by Enid K. Lemon

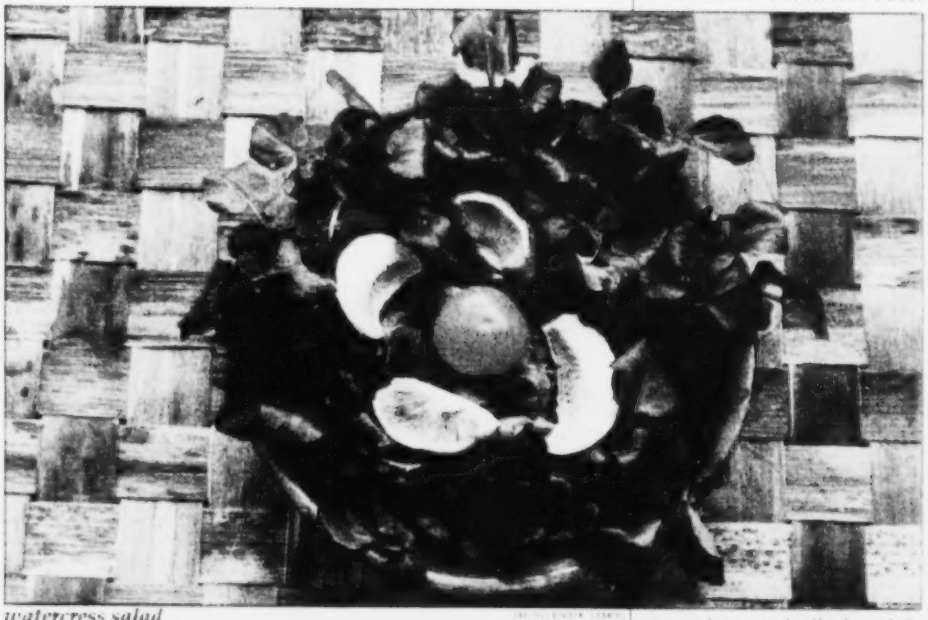
Immigrant Edibles

During the eighteenth and nineteenth centuries a number of plants became landed immigrants in British Columbia. This was the era when trade between Europe and North America was going full steam, and man's travels were closely connected with the spread of European edible plants. Today, many of the plants we assume are native to B.C. are descendants of travellers from foreign shores.

The dandelion (*Taraxacum officianale*) originated in Greece and is thought to be one of the bitter herbs of the Old Testament. The name, "dandelion," is believed to be a corruption of the French word "dent de lion," or a Greek word "leontodon" — both meaning "lion's tooth" — describing the leaves of this plant.

The genus name, *Taraxacum*, is a Greek word meaning "remedy for disorders." The oldtime herb doctors squeezed the juice from the freshly dug roots and gave it to the sick. The herbalists knew nothing of vitamins or minerals, knowing only that certain plants were good tonics. As it happens, dandelion leaves are a rich source of vitamin A and contain a good supply of calcium, potassium, magnesium and iron.

The dandelion has been eaten throughout history and has been cultivated in Europe for many years. The seeds probably came to North America in packing material, and the plant is often referred to as "the tramp with the golden head." It is found just about everywhere and has been carried far into the wilderness by wind, trappers, and range and pack animals.



watercress salad

Every part of the dandelion is edible. If the leaves taste bitter, you have either picked them in the sun or else they are too old. It is best to pick dandelion leaves before the flowers appear. The peeled roots will make a coffee substitute if you dry, roast and grind them. They can also be cooked like parsnips; parboiled and then fried. Many people find dandelion tea soothing for an upset stomach. Just pour boiling water over a handful of leaves and flower petals and steep for five minutes.

Dandelion flowers contain a copious supply of nectar and pollen for use by honey bees. The nectar helps to produce a golden honey, and the pollen is an important food for brood rearing. It has been estimated that no less than 93 different kinds of insects make use of this plant.

Chicory (*Cichorium intybus*), native to Europe and Asia, is a relative of the dandelion. Its leaves are very similar to a dandelion's, and young chicory leaves are a good addition to any salad. They are also a source of potassium. The flowers, which usually open in the morning and close in the afternoon, are as bright a blue as a cloudless sky.

Historical records of watercress (*Rorippa nasturtium-aquaticum*), a member of the mustard family, go back at least 5,000 years. There are dozens of interesting medical uses attributed to this plant, and perhaps one of the most unusual is that in Roman times it was prescribed for people who were insane or possessed of the devil. As early as 62 A.D. the Roman writer Pliny listed over three dozen uses for watercress. Among these was the use of the smoke from the burning plant to drive away snakes.

The early European settlers who brought watercress to North America used it as a spring tonic after a long, hard and dreary winter. This is not surprising, as watercress is a good source of vitamin A, as well as a source of iron, manganese, sulfur, calcium and copper.

Watercress has become established in many wild streams throughout B.C. When gathering this plant from unpolluted water, don't pull up the whole root, rather, either cut or snip off the green leaves. These have a slightly peppery taste, and one of the plant's common names is pepperleaf.

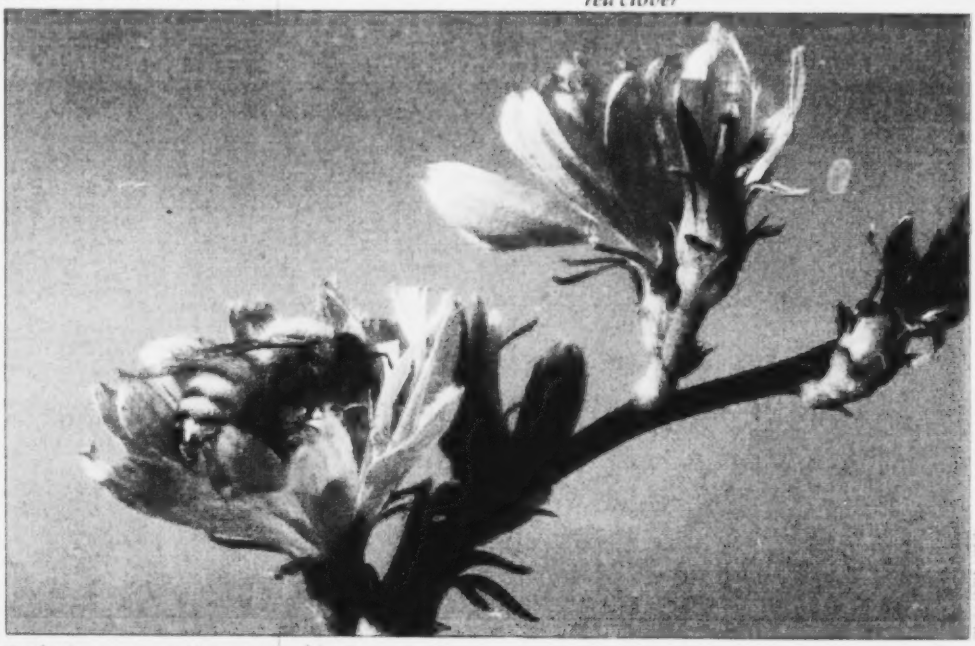
A word of warning! The poisonous water hemlock sometimes grows in association with watercress. Water hemlock is much taller than watercress, and its leaves are dissected. The leaf veins end in the notches between the teeth, not at the tips of the teeth as in the case with watercress. The water hemlock flowers resemble those of the carrot. It was a species of the same family that killed Socrates, the Greek philosopher who was condemned to die by "drinking of the hemlock." Therefore, before eating your first taste of watercress, be sure you have identified it properly.

Both the red clover (*Trifolium pratense*) and white clover (*T. repens*) were introduced to North America as crop plants. The name *Trifolium* means "three-leaf," but occasionally a plant with four leaves can be found. A four-leaf clover has long been considered to bring you good luck.

The young clover leaves and flowers can be eaten raw in a salad. Red clover tea is an old remedy for easing a throat that wants to cough. It can be made with fresh or dried flowers. Use one teaspoonful to each cup of boiling water. Both red and white clovers can be enjoyed as a good country wine, made in a similar way to dandelion wine.

The immigrant edibles described here are just a few of the many plants of foreign origin introduced into North America through the centuries.

red clover



chicory

watercress flower

Kitchen Hints for Forest Edibles

Dandelion Wine

Pick a gallon of flowers early on a dry morning, making sure you do not gather any part of the stem or allow "the milk" to get into your container. Press the flowers into a 2-gallon crock, pour a gallon of boiling water over them and leave for 3 days. Strain through a cloth, squeezing all the liquid from the flowers. Add the juice and thinly sliced rind and pulp from 3 oranges and 3 lemons. Stir in 3 pounds of sugar. Add 1 oz. of yeast. Cover the crock with a cloth and let stand for 3 weeks while the mixture ferments. When the mixture has finished fermenting, strain again and bottle. Store in a dark, cool place for at least six months until the wine is a clear golden colour.

Dandelion Sandwich and Salad

Place 4 to 5 very young and tender leaves plus the petals from a partially opened dandelion flower between buttered whole wheat bread and you have a dandelion sandwich.
The leaves and petals also add zest to a tossed salad. The crown, which is the portion between the root and the surface greens, can be cooked like the heart of an artichoke.

Chicory Coffee

The roots of a cultivated variety of chicory are imported from Europe to be blended with coffee beans, so why not dig up your own chicory roots? Scrub them well and roast them slowly, until you can break them between your fingers. Grind and store the roasted roots until you are ready to blend them with your favourite coffee beans.

Watercress-Onion Salad

Try a watercress onion salad. Wash the watercress. Finely shred fresh spring onions into a wooden salad bowl that has been rubbed with a cut garlic clove. Add the watercress and sprinkle with salt and a few drops of oil and vinegar. Toss. Add enough sour cream to moisten the cress and toss again. This makes a marvelous salad with a slightly peppery flavour — delicious!

Watercress Sandwich

Watercress sandwiches have been a European delight for centuries. Just wash the plant's leaves and tender stalks and spread them out on thin buttered slices of whole wheat bread. Cover with more whole wheat bread slices.

Watercress Soup

You need 1 oz. butter, 2 spring onions, 2 handfuls of watercress, 1 pint chicken stock, 2 egg yolks, 1/4 pint plain yogurt, salt and pepper. Melt the butter in a large saucepan. Chop onions and saute in the butter until soft. Wash and chop watercress, setting aside a few sprigs for decoration. Add the watercress and the chicken stock to the saucepan containing the onions. Cover and bring to a boil, simmer 15 minutes. Blend, or rub through a sieve, then return to saucepan. Beat egg yolks and mix with yogurt, gradually adding the mixture to the soup. Season to taste and heat through, but do not allow to boil. Serve sprinkling a little watercress into each bowl.

Province of British Columbia
Ministry of Forests

COASTAL DOUGLAS FIR

(Pseudotsuga menziesii)

The three trees that have made British Columbia famous are the Sitka spruce, western red cedar, and Douglas fir. Perhaps the greatest of these is the tree named after 19th century Scottish botanist David Douglas who realized it was not a true fir, but a distinct genus of its own. The Douglas fir of the B.C. interior displays different growth habits from the coastal Douglas fir, but it is still the same tree.

One of the world's most important timber species, the Douglas fir has many claims to greatness. After the redwoods, it is the tallest tree in North America, with old growth specimens measuring two to three metres in diameter and over 80 metres high; the tallest tree known in B.C. was a Douglas fir. The wood of a Douglas fir is strong, durable, and good for high-quality construction lumber, plywood, and sulphate pulp. Douglas fir lends itself to forest management operations because it grows rapidly and is less susceptible than other conifers to disease and insect infestation. A pioneering species, Douglas fir quickly establishes itself on burnt or logged over forest sites.